In-Class Problems 21 for Wednesday, April 18

These problems are from Pre-Class Problems 21.

1. For the following hyperbolas, identify the center, the vertices, the foci, and the asymptotes. Sketch the graph of the hyperbola in a, b, and d.

    a. $\dfrac{x^2}{64} - \dfrac{y^2}{49} = 1$

    b. $9y^2 - 25x^2 = 225$

    c. $\dfrac{4x^2}{5} - \dfrac{9y^2}{16} = 1$

    d. $9(y - 7)^2 - 4(x + 2)^2 = 144$

2. Write the standard form of the equation of the hyperbola with vertices of $(-\sqrt{15}, 0)$ and $(\sqrt{15}, 0)$ and foci of $(-8, 0)$ and $(8, 0)$.

3. For the following parabolas, identify the vertex, the focus, the directrix, and the axis of symmetry. Sketch the graph of the parabola.

    a. $x^2 = 12y$

    b. $(x - 3)^2 = -7(y + 5)$

    c. $y^2 = -9x$

    d. $(y + 4)^2 = 8(x - 2)$